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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
BELLO, AGUSTIN	
ART UNIT	**PAPER NUMBER**
2633	

DATE MAILED: 08/09/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/932,705	BYERS ET AL.	
	Examiner	Art Unit	
	Agustin Bello	2633	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-13 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-13 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on 16 January 2002 is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date 5-8.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1, 3, 5, 8, 10, and 12 are rejected under 35 U.S.C. 102(b) as being anticipated by Durant (U.S. Patent No. 6,016,212).

Regarding claims 1 and 8, Durant teaches a method for use in a stored program controlled system comprising a plurality of processing units (reference numerals 60, 62 in Figure 1; column 2 lines 25-30) and a signal generator ("telecommunication network infrastructure" of column 2 lines 35-38 and reference numerals 12 and 14 in Figure 1) for interconnecting processing units using wavelength division multiplexing (column 2 lines 23-24) over a free space beam line (reference numeral 34 in Figure 1), said method including the steps of: generating a message (e.g. via "telecommunication network infrastructure" of column 2 lines 35-38) at one of said plurality of processing units (reference numeral 62 in Figure 1) for a destination processing unit (reference numeral 54, 56, or 58 in Figure 1) comprising another one of said plurality of processing units; modulating (column 2 lines 51-54) the message on a specific optical wavelength (e.g. any one of $\lambda 1$-λN of reference numeral 14 in Figure 1; column 1 lines 50-51); transmitting the modulated message over said free space beam line (column 3 lines 2-7); receiving said modulated message at a wavelength selective receiver (reference numerals 46 and 50 in Figure 1; column 3 lines 13-24), selecting a particular wavelength at said receiver (e.g.

"single wavelength" of column 3 lines 13-24), and recreating the message (e.g. "processed by control circuitry" of column 3 lines 21-24) and forwarding it to said destination processing unit (reference numerals 54, 56, or 58 in Figure 1).

Regarding claims 3 and 10, Durant teaches a method in accordance with claims 1 and 8 wherein said signal generator includes a plurality of fixed wavelength lasers (e.g. λ1-λN of reference numeral 14 in Figure 1; column 1 lines 50-51), each of which operates on a different wavelength, said step of modulating comprising: delivering said message to one of said plurality of fixed wavelength lasers (column 1 lines 50-51; via reference numeral 12 in Figure 1) corresponding to said specific optical wavelength (e.g. any one of λ1-λN of reference numeral 14 in Figure 1; column 1 lines 50-51) prior to modulating the message on said specific optical wavelength (e.g. electric data signal is input via reference numeral 12 to reference numeral 14 in Figure 1 prior to modulating the message onto a specific optical wavelength).

Regarding claims 5 and 12, Durant teaches method in accordance with claims 1 and 8 wherein said wavelength selective receiver comprises one of a plurality of fixed wavelength photodetectors (reference numeral 104a – 104d in Figure 4), all operating at different wavelengths (e.g. λ1-λ4), said step of selecting comprising; receiving only the fixed wavelength (as shown in Figure 4).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 2 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Durant in view of Scifres (U.S. Patent No. 6,414,774).

Regarding claims 2 and 9, Durant teaches providing the message (e.g. via "telecommunication network infrastructure" of column 2 lines 35-38) to a signal generator prior to modulating the message on said specific wavelength (inherent in that "Data" of column 2 lines 30-34 is provided at the input of transmitters 14 in Figure 1). However, Durant differs from the claimed invention in that Durant fails to specifically teach that said signal generator includes a tunable laser. However, the use of tunable lasers in free-space optical communication systems is very well known in the art. Scifres, in the same field of free-space optical communication, teaches the use of tunable lasers (column 6 line 61 – column 7 line 2). One skilled in the art would have been motivated to include a tunable laser as taught by Scifres in the signal generator of Durant in order to arbitrarily address receiving terminals with tunable or fixed wavelength filters (column 7 lines 1-2 of Scifres). Furthermore, one skilled in the art could reasonably expect to succeed in including a tunable laser as taught by Scifres in the device of Durant since both Scifres (column 6 line 61 – column 7 line 2) and Durant (column 2 lines 41-43) call for lasers that include distributed feedback lasers (DFB). Therefore, it would have been obvious to one skilled in the art at the time the invention was made to include a tunable laser as taught by Scifres in the signal generator of Durant.

Durant further differs from the claimed invention in that Durant fails to specifically teach that said step of modulating comprises: tuning said tunable laser to said specific optical wavelength prior to modulating the message on said specific optical wavelength. However, as discussed above, Scifres obviates the use of tunable lasers in free-space optical communication

system such as that taught by Durant. Furthermore, as previously discussed, Durant teaches providing the message (e.g. via "telecommunication network infrastructure" of column 2 lines 35-38) to a signal generator prior to modulating the message on said specific wavelength (inherent in that "Data" of column 2 lines 30-34 is provided at the input of transmitters 14 in Figure 1). One skilled in the art would clearly have recognized that in combining the teachings of Durant and Scifres, the step of modulating would have comprised tuning said tunable laser of Scifres to said specific optical wavelength prior to modulating the message on said specific optical wavelength since doing so would have been consistent with Scifres' desire to arbitrarily address receiving terminals with tunable or fixed wavelength filters. For example, one skilled in the art would clearly have recognized that tuning the tunable laser *after* modulating the message on a specific wavelength could have possibly resulted in the message being sent to two different receiving terminals on two different wavelengths, hence diverging from Scifres' desire to address a receiving terminal and Durant's disclosure to provide the message to a signal generator prior to modulating the message on a specific wavelength. Therefore, considering the teachings of Durant and Scifres in combination, it would have been obvious to one skilled in the art at the time the invention was made that said step of modulating would have comprised tuning said tunable laser to said specific optical wavelength prior to modulating the message on said specific optical wavelength.

5. Claims 4 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Durant (U.S. Patent No. 6,016,212).

Regarding claims 4 and 11, Durant teaches a wavelength selective receiver comprising a single photodetector (reference numerals 46, 46a, and 50 in Figure 1) and further teaches that the

step of selecting comprises tuning the photodetector to a specific optical wavelength (e.g. "single wavelength" of column 3 lines 13-24). Furthermore, Durant teaches that an array comprising a plurality of fixed wavelength photodetectors (reference numeral 104, 106 in Figure 4) can be employed as the receiver of the free-space optical communication system. Durant differs from the claimed invention in that Durant fails to specifically teach a plurality of tunable photodetectors as indicated by the applicant's claim to "tunable photodetectors." However, as indicated by Durant, tunable photodetectors are well known in the art. Furthermore, one skilled in the art would clearly have recognized that the photodetectors of the array taught by Durant (reference numeral 106 in Figure 4) could have included tunable photodetectors. One skilled in the art would have been motivated to include tunable photodetectors in the array of Durant in order to have the ability to extract single channels at each of the photodetectors (reference numeral 104 in Figure 4), an ability sought by Durant (column 5 lines 8-11). In reviewing Durant, one skilled in the art would clearly have recognized that tunable photodetectors are well known in the art and further that using tunable photodetectors in the detector array of Durant (Figure 4) would have resulted in precise extraction of single channels desired at the photodetectors (reference numeral 104 in Figure 4) from the multiple channels received by the detector (reference numeral 106 in Figure 4) from the diffraction grating (reference numeral 102 in Figure 4), thereby mitigating any crosstalk effects due to overlap of the optical signals (reference numeral 98 in Figure 4). Therefore, it would have been obvious to one skilled in the art at the time the invention was made to include a plurality of tunable photodetectors in the wavelength selective receiver of Durant.

6. Claims 6, 13, and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Durant in view of Zouganeli (U.S. Patent No. 6,735,393).

Regarding claims 6 and 13, as discussed in claims 4 and 5, Durant teaches both fixed and tunable photodetectors and further obviates their use in a photodetector array (Figure 4). Durant differs from the claimed invention in that Durant fails to specifically teach dynamically allocating bandwidth by receiving messages on a primary wavelength at said one of a plurality of fixed wavelength photodetectors and receiving one or more messages on other wavelengths at said tunable photodetector. However, dynamic bandwidth allocation is well known in the art. Zouganeli, in the same field as Durant of optical communication, teaches dynamically allocating bandwidth by receiving messages on a primary wavelength (e.g. "dedicated wavelengths" of column 10 lines 59-61) at said one of a plurality of fixed wavelength photodetectors (column 10 lines 59-61) and also teaches receiving one or more messages on other wavelengths at said tunable photodetector (column 3 lines 27-30, column 10 lines 61-66, column 11 lines 20-27, 48-51, column 12 lines 20-22, column 18 lines 12-20). One skilled in the art would have been motivated to incorporate the dynamic bandwidth allocation method taught by Zouganeli as part of the free-space optical communication system of Durant since doing so would have provided dynamic allocation of network resources and good wavelength reuse possibilities (column 10 lines 64-66 of Zouganeli). Furthermore, one skilled in the art could reasonably expect to succeed in implementing the method of Zouganeli into the system of Durant since Zouganeli explicitly discloses that method can be applied to any topology (column 6 lines 8-10). Therefore, it would have been obvious to one skilled in the art at the time the invention was made to dynamically allocate bandwidth by receiving messages on a primary wavelength and by receiving one or

more messages on other wavelengths as taught by Zouganeli at said one of a plurality of fixed wavelength photodetectors and at a tunable photodetector, respectively of the array obviated by Durant.

Regarding claim 14, the combination of references and Zouganeli in particuar teaches means (e.g. tunable transmitter, tunable receivers) for dynamic wavelength allocation and deallocation responsive to system load (column 11 lines 20-27 of Zouganeli).

7. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Durant in view of Scifres as applied to claim 2 above, and further in view of Zouganeli.

Regarding claims 7, as discussed in the rejection of claim 2, the combination of Durant and Scifres obviates the use of fixed wavelength transmitters (Durant) and tunable wavelength transmitters (Scifres). The combination of Durant and Scifres fails to specifically teach dynamically allocating bandwidth by transmitting messages on a primary wavelength at said fixed wavelength transmitter and transmitting one or more messages on other wavelengths at said tunable transmitter. However, dynamic bandwidth allocation by transmitting messages on a primary wavelength at said fixed wavelength transmitter and transmitting one or more messages on other wavelengths at said tunable transmitter is well known in the art. Zouganeli, in the same field as Durant and Scifres of optical communication, teaches dynamically allocating bandwidth by transmitting messages on a primary wavelength (e.g. "dedicated wavelengths" of column 10 lines 59-61) at said fixed wavelength transmitter (e.g. "array of lasers" of column 6 lines 18-20) and transmitting one or more messages on other wavelengths (e.g. via "Time-division multiplexing" of column 5 lines 9-10) at said tunable transmitter (e.g. "Tunable lasers" of column 6 lines 18-20). One skilled in the art would have been motivated to incorporate the

dynamic bandwidth allocation method taught by Zouganeli as part of the free-space optical communication system of Durant and Scifres since doing so would have provided dynamic allocation of network resources and good wavelength reuse possibilities (column 10 lines 64-66 of Zouganeli). Furthermore, one skilled in the art could reasonably expect to succeed in implementing the method of Zouganeli into the system of Durant and Scifres since Zouganeli explicitly discloses that method can be applied to any topology (column 6 lines 8-10). Therefore, it would have been obvious to one skilled in the art at the time the invention was made to dynamically allocate bandwidth by transmitting messages on a primary wavelength and by transmitting one or more messages on other wavelengths as taught by Zouganeli at said one of a plurality of fixed wavelength transmitter and at a tunable transmitter, respectively of the array obviated by the combination of Durant and Scifres.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Agustin Bello whose telephone number is (703)308-1393. The examiner can normally be reached on M-F 8:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on (703)305-4729. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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